CHAPTER 4.0 CURRENT ROADWAY AND TRAFFIC CHARACTERISTICS

This chapter presents an overview of the current roadway and traffic characteristics within the study area.

4.1 CURRENT ROADWAY CHARACTERISTICS

The study area is traversed by major regional roadways, including I-15, I-215, and Bangerter Highway. SR 201 and SR 111, although they are at the boundary of the study area, are significant arteries for the study area mobility. The major east-west facilities are 3500 South, 4100 South, 4700 South, 5400 South, 6200 South, 7000 South, 7800 South, 9000 South, 118000 South, 12600 South, 13400 South, and 14600 South. The major north-south facilities are 1300 West, 2700 West, Redwood Road, 5600 West, 6400 West, and 7200 West.

The roadway characteristics were determined using the Wasatch Front Regional Council (WFRC) regional travel demand model, and for 2005 horizon years. Most of the roadways located in the study area were classified as minor arterials and collectors. Figure 4-1 through Figure 4-3 display the current roadway system.

Figure 4.1 shows the total number of lanes of both directions on each of the roadways. For roadways classified as freeways (SR 201, I-215, and I-15), the number of lanes is presented by direction, rather than the total of lanes for both directions.

Figure 4.2 shows the speed limits for each facility. For modeling purposes, the ranges of speed limits were grouped into these following increments: 20 to 30, 31 to 40, 41 to 50, 51 to 60, and greater than 60 miles per hour (mph). In 2005, the speeds posted on the freeways and portions of a few additional roadways were between 55 and 65 mph. Approximately half of the remaining roads had posted speeds between 30 and 40 mph, while the other half had posted speeds between 41 and 50 mph.

Figure 4.3 shows the functional classifications of the roadways in the study area. The functional classifications indicate the type of roadways; classifications include freeway, highway, principal and minor arterials, and collector routes.

Figure 4-1. 2005 Number of Lanes

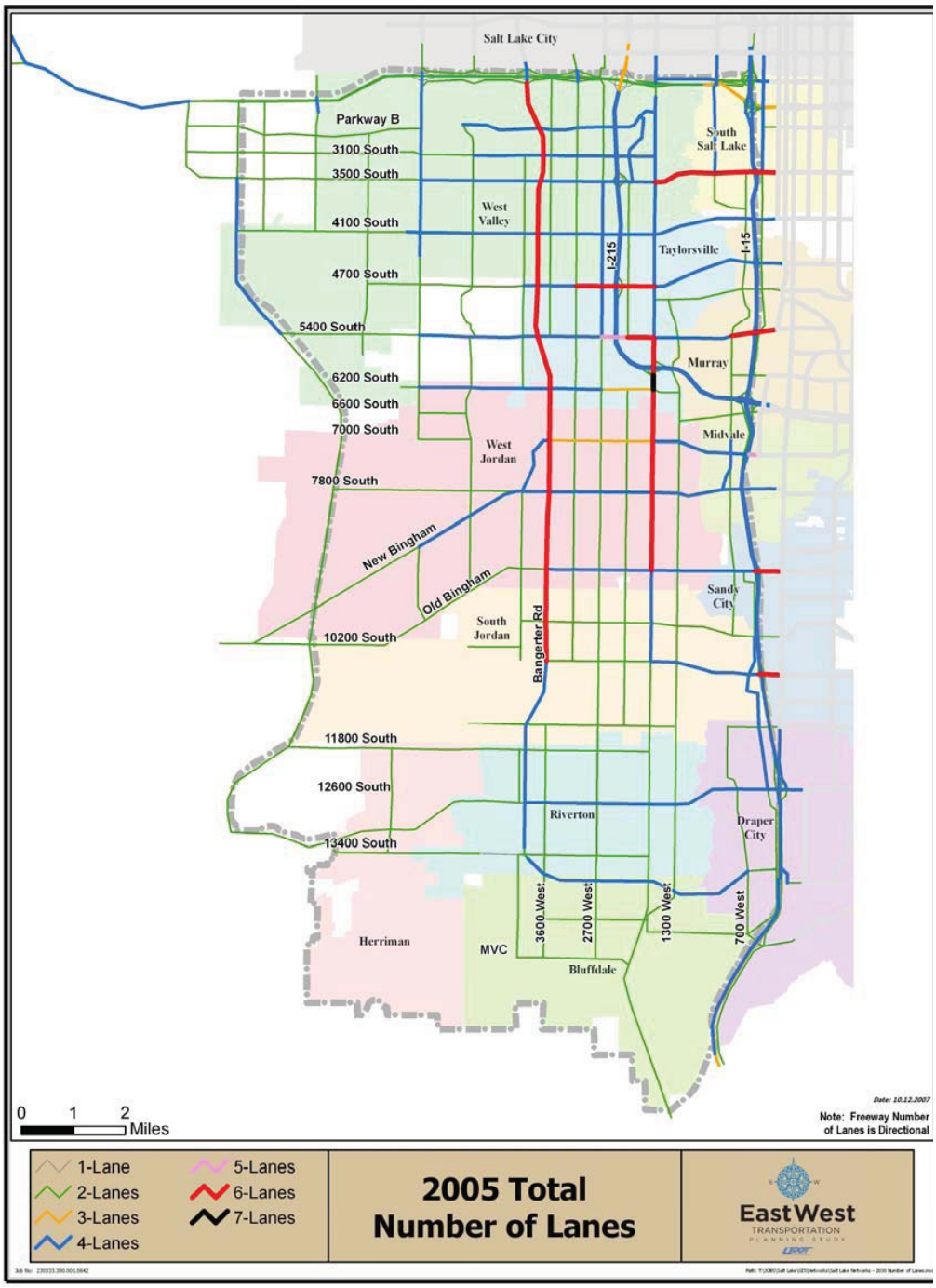


Figure 4-2. 2005 Posted Speeds

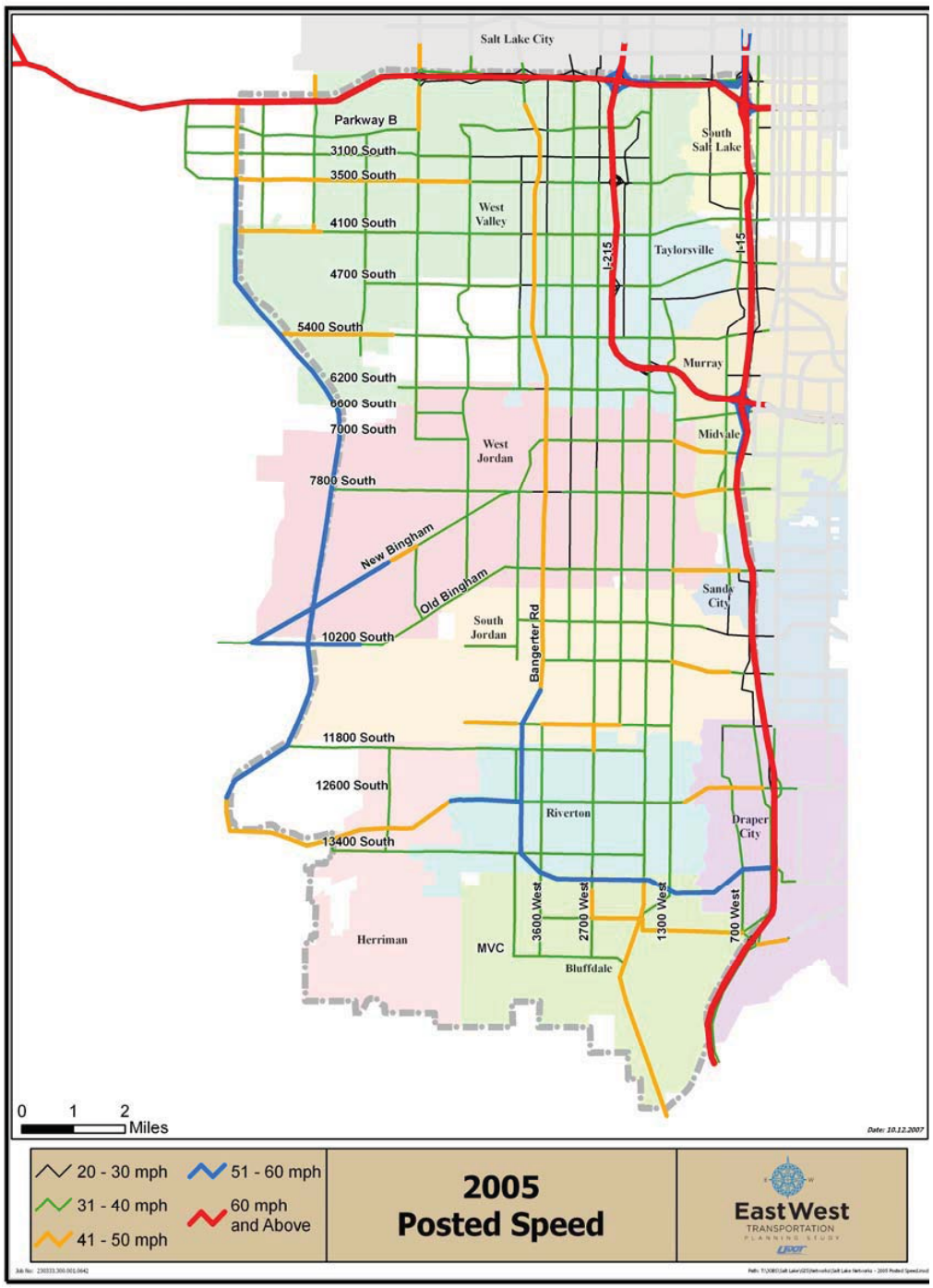
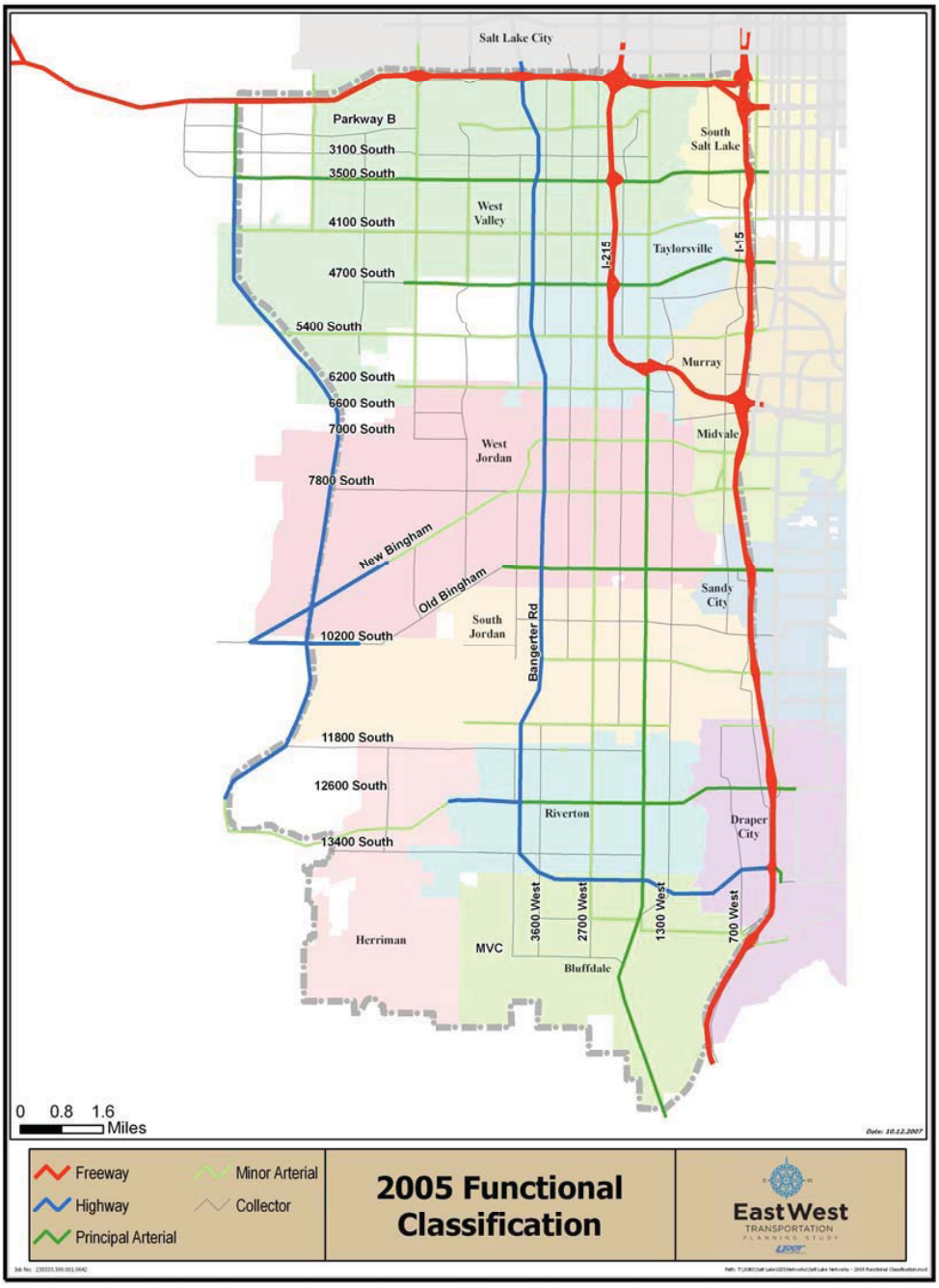
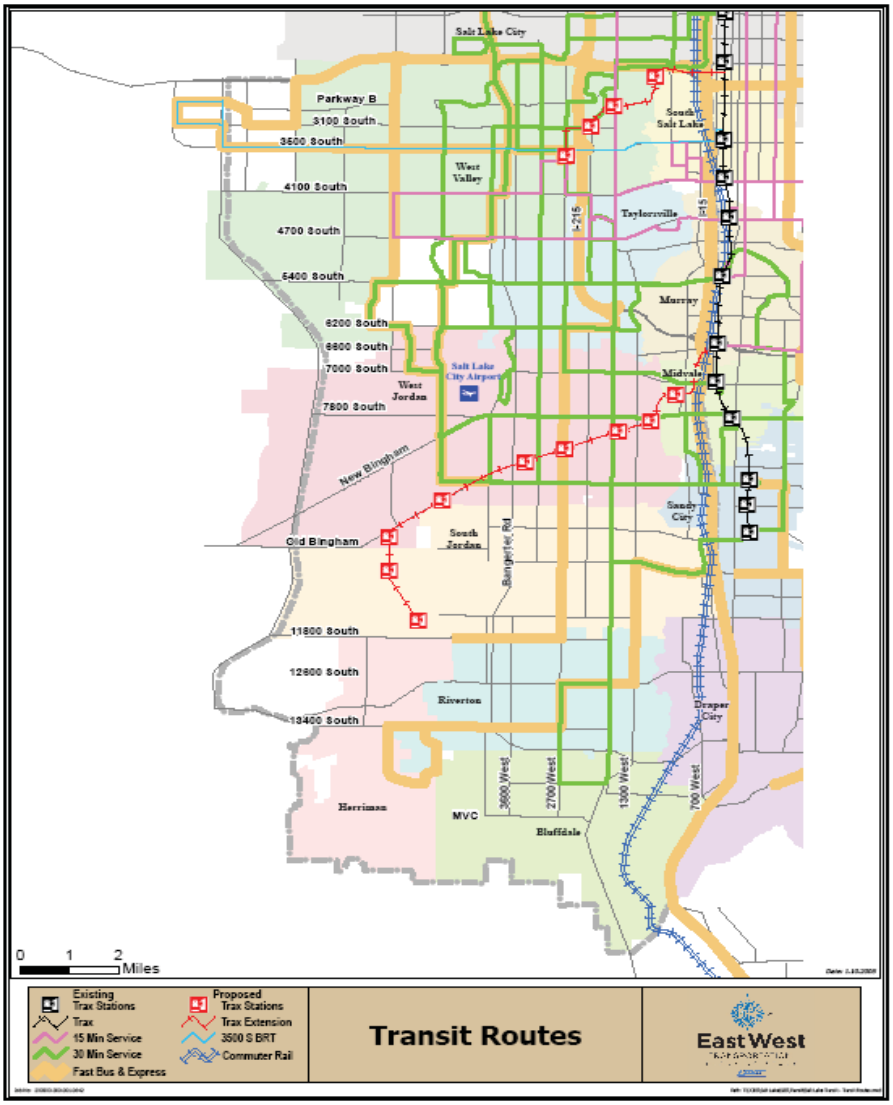


Figure 4-3. 2005 Functional Classification



The current transit system found within the study area is illustrated in Figure 4-4. As expected, the transit system is indicative of the study area's current population and employment densities in that it primarily serves the northern and central portion of the study where these densities are greatest. In large part, the majority of the routes in the study area run east-west with five major north-south routes located on Redwood Road, 2700 West, 3200 West, 4000 West, and 4800 West. The study area is also served by a number of Utah Transit Authority (UTA) Fast bus and Express bus routes that provide direct service to specific areas within the study area.

Figure 4-4. Current Transit System Within Study Area



Beginning in April 2008, there will be one Bus Rapid Transit (BRT) route in that will run on 3500 south from the Millcreek TRAX station to Magna. In addition, there are two proposed light rail lines--West Valley and Mid-Jordan. They are anticipated to be completed in 2012 and 2010, respectively. While not located in the study area, the Sandy/Salt Lake TRAX line, which runs along 200 West, does provide extensive linkage service opportunities for bus routes within the study area. In addition, the Southern portion of the FrontRunner commuter rail, which parallels I-15, will provide high-speed service to three stations located within the study area. Construction of commuter rail is anticipated to begin in 2011 and to be complete and in operation by 2015.

4.2 TRAFFIC VOLUMES

The travel demand model utilized for the project was the WFRC recently validated 2005 model with some additional modifications that include refined traffic analysis zones (TAZs) and roadways in the Kennecott Land area. Modification to the WFRC-validated model was based on information collected from the West Bench Study, performed for Kennecott Land by Fehr & Peers. Hence, the model used in this study is referred to as the West Bench Model. Figure 4-5 depicts the West Bench Model TAZ structure. To ascertain model performance, a screenline analysis was conducted between model-forecasted traffic volumes and the 2005 traffic counts. To more clearly identify traffic mobility within the study area, traffic counts were conducted in August 2007 at specific locations that either did not have the needed data or where current counts were in question. Figure 4-6 identifies the screenlines used in the study analysis.

Figure 4-5. 2005 West Bench Model TAZ Structure

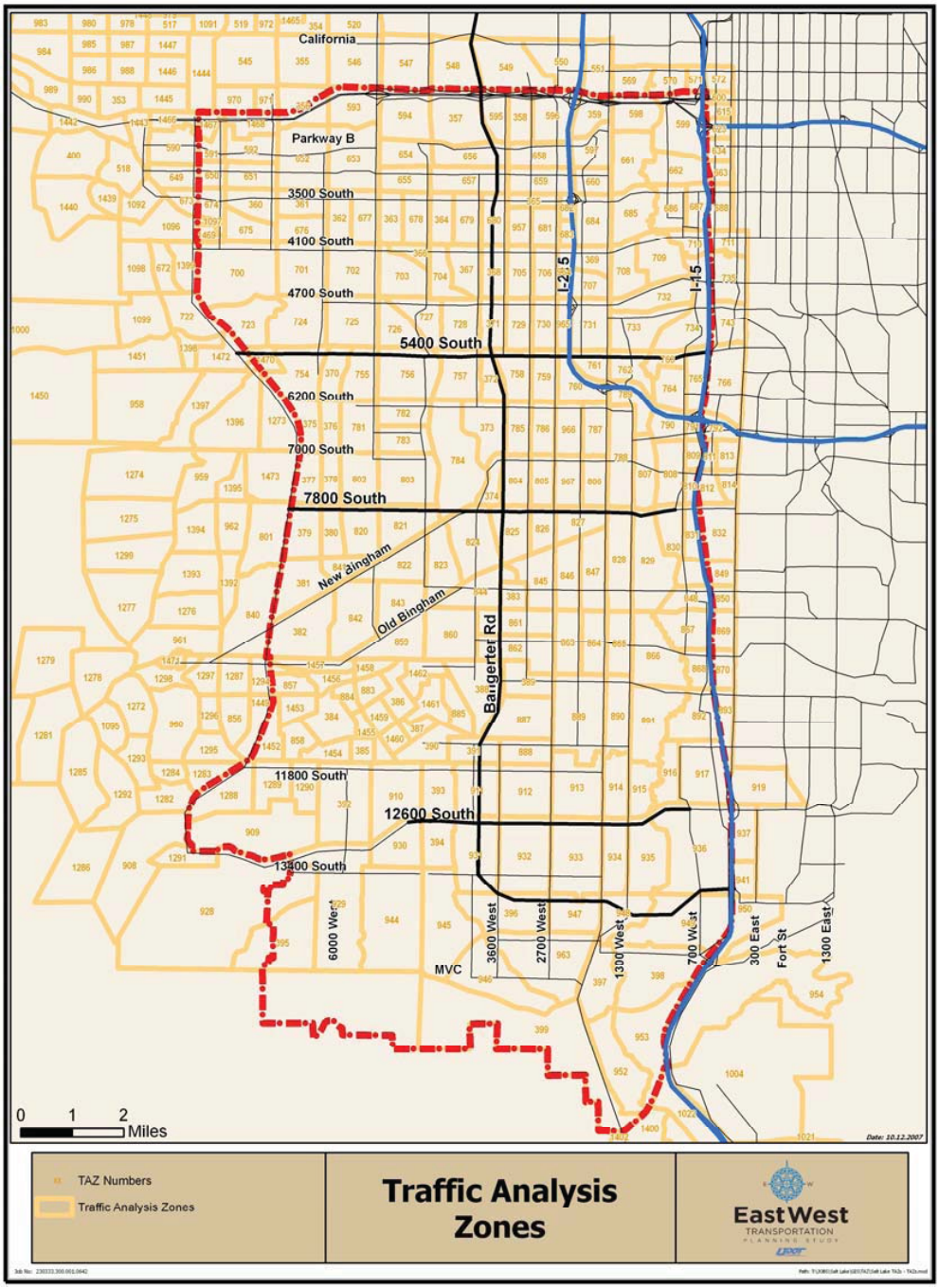
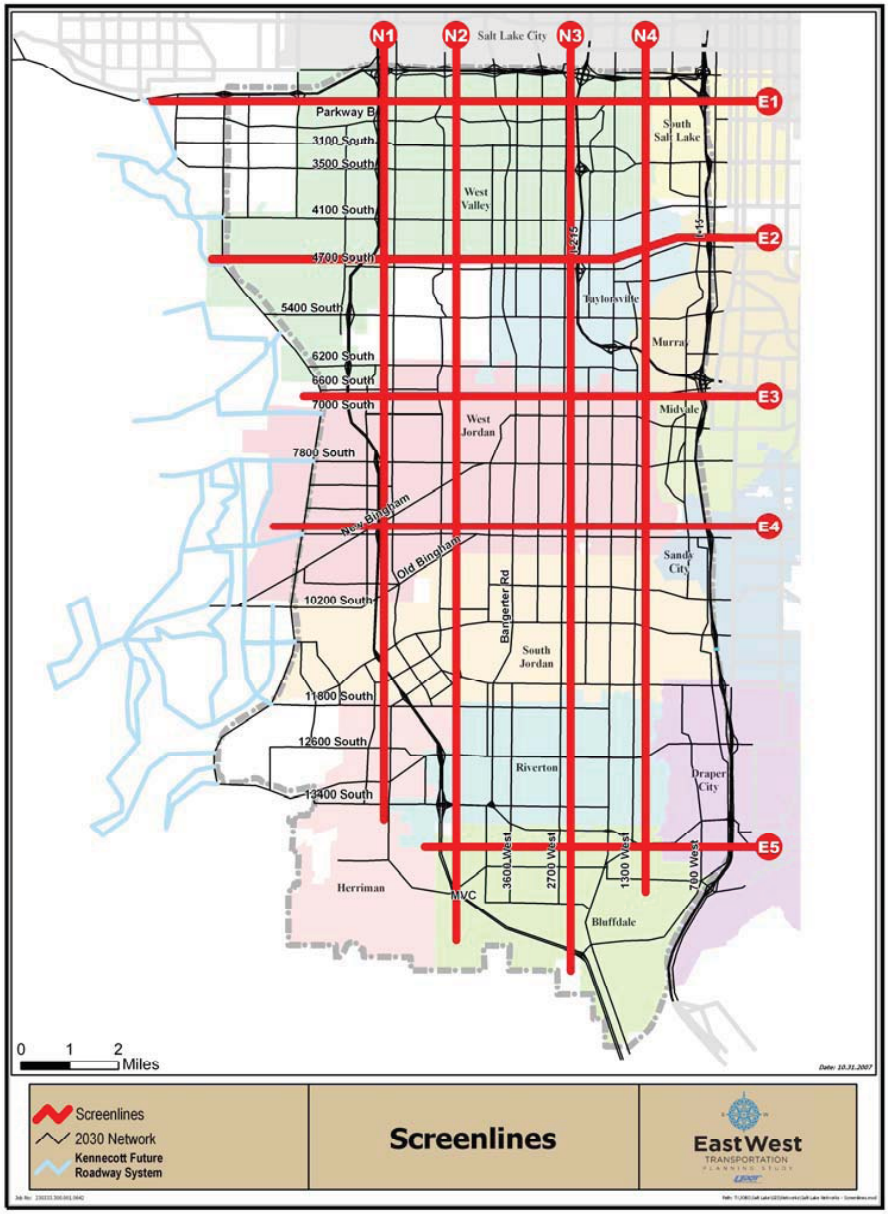


Figure 4-6. Screenlines



Screenline analysis is a simple but useful technique that assesses the accuracy of travel demand model results and facilitates the proper interpretation of the information provided. A total screenline volume is established by adding up all the volumes on individual streets that cross the screenline. Even though volumes on one specific street

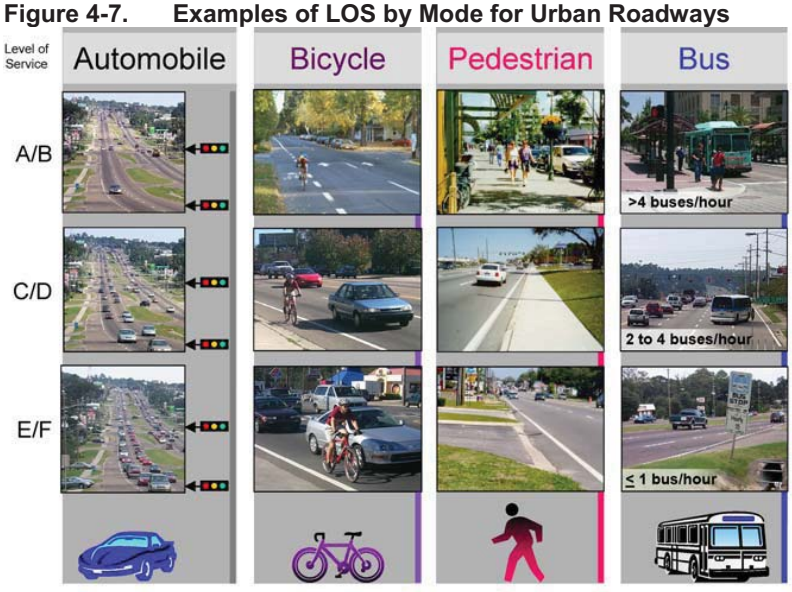
may be high or low because of the variances in model simulation, the screenline volume should be consistent with traffic count information and other validity checks.

The reported 2005 West Bench travel demand model daily traffic volumes along the identified nine screenlines were compared to 2005 and recent daily traffic counts. On a screenline basis, the 2005 travel demand model was found to be performing at a satisfactory level. On a roadway-by-roadway basis, it was apparent that traffic was being overassigned on some facilities and underassigned on adjacent parallel facilities. The 2005 daily traffic volumes from the West Bench travel demand model were manually adjusted by moving traffic volumes from overassigned facilities to parallel facilities that were underassigned.

4.3 LEVEL-OF-SERVICE ANALYSIS

The operation and functionality of a street or highway is described in terms of its level of service (LOS). The LOS is a qualitative indication of operations based on performance factors, such as speed, travel time, maneuverability, and delay. The LOS of a facility is designated as a letter, A to F, with LOS A representing the best operating conditions (generally uninterrupted conditions) and LOS F representing the worst (congested conditions). Figure 4-7 provides a graphic illustration of the range of LOS that is possible for automobile, bicycle, pedestrian, and bus. Generally, an LOS in the range of C to D is desirable for urban conditions, and LOS B to C is desirable for rural conditions.

Figure 4-7. Examples of LOS by Mode for Urban Roadways



The daily roadway LOS for each of the roadways crossing the identified screenlines was determined based on the *Generalized Annual Average Daily Volumes for Florida's Urbanized Areas*, Florida Department of Transportation, February 2002, and the adjusted roadway daily traffic volumes. The freeway LOS determinations utilized data based on interchange spacing at less than two miles apart, while the remaining roadway LOS determinations utilized data based on non-state, major city/count roadway information. Table 4-1 displays the total adjusted traffic volume for each screenline.

Table 4-1. 2005 Screenlines Adjusted Total Volumes

Screenline	2005 Daily Volume
N1	129,639
N2	240,163
N3	324,478
N4	460,981
E1	453,031
E2	465,326
E3	324,744
E4	264,062
E5	131,373

The detailed 2005 data, including the adjusted volumes and LOS determinations for individual segments of a screenline, are included in Appendix A.

It was found that the roadway facilities were generally operating at LOS C/D in the 2005 modeled year. There were a few roadway segments along each screenline that were determined to be operating at LOS E/F that varied by screenline. These were SR 201, 3500 South, 5400 South, 9000 South, Redwood Road, and I-15.

4.3.1 Vehicle Miles Traveled and Vehicle Hours Traveled

The daily vehicle miles traveled (VMT) and vehicle hours traveled (VHT) were calculated for the study area per roadway functional classification group. The roadway functional classification groups are as follows: freeway, highway, principal arterial, minor arterial, and collector.

The VMT is a measure of overall regional travel. VMT was calculated by multiplying the average daily traffic volumes on each roadway segment by the length of respective roadway segment, with units of vehicle miles. VHT provides a general indication of roadway travel speeds and times spent driving. VHT was calculated by multiplying the average daily traffic volumes on each roadway segment by the respective travel time along the roadway, with units of vehicle hours. All results are listed in Table 4-2.

Table 4-2. 2005 Daily VMT and VHT by Functional Classification

	VMT	VHT	Average Speed
Freeways	4,799,533	83,307	57.61
Highways	868,940	18,369	47.31
Principal Arterial	982,055	28,183	34.85
Minor Arterial	1,533,819	46,744	32.81
Collectors	803,866	27,823	28.89
Study Area Total	**8,988,213**	**204,426**	**43.97**

For 2005, the total study area VMT was found to be approximately 8,988,200, with VHT approximately 204,400. Freeway facility types have the highest VMT/VHT in 2005, with minor arterials having the second highest. The remaining three facility types all have approximately the same VMT and VHT. The average speed by facility type is calculated by dividing VMT by VHT. This variable is often used as a validity check, as an order of magnitude indicator of future congestion, and as a potential evaluation criterion during comparison of alternatives.